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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/091,080	03/05/2002	William J. Hunt	57080US002	6723

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EXAMINER

UHLIR, NIKOLAS J

ART UNIT	PAPER NUMBER
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1773

DATE MAILED: 08/27/2003

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/091,080

Applicant(s)

HUNT ET AL.

Examiner

Nikolas J. Uhler

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-18 is/are rejected.
- 7) ☐ Claim(s) ____ is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on ____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on ____ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) 2
- 4) ☐ Interview Summary (PTO-413) Paper No(s) ____
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other:

DETAILED ACTION

Claim Rejections - 35 USC § 112

1. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-18 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention. In the instant case, claims 1-18 require "super abrasive" particles. It is unclear to the examiner what the scope of "super abrasive" is, as "super abrasive" is a relative term that can be interpreted in different ways. What level of abrasiveness/hardness is required for a particle to be considered "super abrasive?"

Claim Rejections - 35 USC § 102/103

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

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5. Claims 1-10, and 13-16 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Bruxvoort et al.

(US5958794).

6. The limitations "derived from an abrasive slurry comprising..... AV of greater than 4.5" in claim 1, all of the limitations require by claims 2-6, 9, "derived from.... An AV of greater than 1.0" in claim 13, "derived from..... an AV greater than 0" in claim 14, all of the limitations of claim 15, and "derived from.... A measurable total amine value" in claim 16 are product-by-process limitations and do not appear to be further limiting in so far as the structure of the final product is concerned. "[E]ven though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985). See MPEP § 2113.

7. In the instant case, the final product of claims 1-16 is a abrasive coating, which the applicant as described in the specification forms by coating a slurry onto a substrate, drying the slurry, and optionally curing the resultant coating. Thus, the final product will not contain any solvent or dispersant in the final product. The Applicant's are respectfully reminded that product claims are predicated by their structure, not by the method in which they were made. It has not yet been established that a coating

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manufactured by the claimed process results in a final product that is manufactured from a different process.

8. Bearing the above in mind, the examiner interprets claim 1 to require an abrasive article comprising a backing having a major surface, and an abrasive coating on the backing, wherein the abrasive coating comprises at least 20% by weight super abrasive particles.

9. Regarding these limitations, Bruxvoort teaches coating a substrate with an abrasive coating, wherein the abrasive coating is comprised of a mixture of abrasive particles and binder precursor. Bruxvoort teaches that in a most preferred embodiment, the abrasive coating is formed from a slurry containing 40-70 parts abrasive particles and 30-60 parts binder precursor (column 23, lines 10-19). The slurry is coated on the substrate after which the slurry and then cured (column 49, lines 35-50). Although the applicants claimed weight % of particles is not expressly taught, it is the examiners position that the abrasive coating formed by coating a solution comprising 40-70 parts particles and 30-60 parts binder precursor meets this limitation. This is due to the fact that the binder precursor will weigh more than the binder in the cured coating, as the binder precursor contains solvents/dispersants that are evaporated when the coating is applied to the substrate and subsequently cured. Thus, a coating formed from a solution containing 40-70 parts particles with 30-60 parts binder precursor will contain >40-70 parts particles with respect to the cured binder precursor.

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10. The limitations of claims 2-6 are purely product by process limitations and thus are not considered by the examiner to be further limiting insofar as the structure of the final product. Accordingly these claims are met as set forth above for claim 1.

11. Claims 7-8 require the abrasive coating to comprise >30% by weight, more specifically between 30-80% by weight of the super abrasive particles. These limitations are met as set forth above for claim 1.

12. The limitations of claim 9 are purely product by process limitations and thus are not considered by the examiner to be further limiting insofar as the structure of the final product. Accordingly these claims are met as set forth above for claim 1.

13. Claim 10 requires the abrasive coating to comprise a binder. This limitation is met as set forth above for claim 1.

14. Claims 13-16, aside from their product by process limitations require the same final product as required by claim 1. Accordingly, these limitations are met as set forth above for claim 1.

Claim Rejections - 35 USC § 103

15. Claims 11-12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruxvoort.

16. Bruxvoort is relied upon as set forth above for claim 1.

17. Claims 11-12 require the super abrasive particles of claim 1 to be made of diamond and to have a particle size of less than 2 μm .

18. Regarding these limitations, Bruxvoort teaches that suitable abrasive particles include diamond, aluminum oxide, silicon carbide, and other materials (column 19, lines

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5-27). Regarding the applicant's particle size limitation. Bruxvoort teaches that the abrasive particles have an average particle diameter from 0.001-50 μ m (column 18, lines 15-35).

19. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to use abrasive diamond particles having an average particle diameter of 0.001 μ as the abrasive particles in Bruxvoort.

20. One would have been motivated to make this modification in light of the fact that Bruxvoort recognizes the equivalency of Diamond abrasive particles to the other materials listed as suitable for use as abrasive particles. One would have utilized 0.001 μ diameter particles in light of the fact that Bruxvoort explicitly teaches that this particle size is suitable.

21. Claims 17-18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bruxvoort in view of Chen et al. (US6048677).

22. Claim 17 requires a method for manufacturing an abrasive article, comprising coating an abrasive slurry comprising super abrasive particles, a continuous phase, and a dispersant comprising a polymer having an average molecular weight of greater than 500 and an AV of greater than 4.5 onto a backing, wherein the super abrasive particles comprise at least 20% of the dry weight of all solids in the slurry, and solidifying the abrasive slurry.

23. Regarding these limitations Bruxvoort teaches a method for manufacturing a abrasive article comprising forming a slurry comprising abrasive particles a binder precursor, and optional additives, followed by coating the slurry on a substrate and

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curing the slurry to form an abrasive coating (column 39, lines 35-50, column 39, lines 40-63). The slurry preferably contains 40-70 parts abrasive particles and 30-60 parts binder precursor. Suitable binder precursors include curable organic binders such as acrylates, epoxies, and other materials. The binder precursor can comprise an acrylate based dispersion, wherein an acrylate polymer is suspended in water with the aid of a dispersing agent.

24. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize an acrylate based dispersion as the binder precursor in Bruxvoort, as Bruxvoort recognizes the equivalence of an acrylate dispersion to the other materials listed as suitable for forming the binder precursor.

25. Bruxvoort does not teach an abrasive article formed by coating a slurry containing a dispersant having a molecular weight of >500 and an AV greater than 4.5 onto a backing.

26. However, with respect to this deficiency, Chen et al. (Chen) teaches a coating composition comprising a binder, a dispersing agent, and abrasive particles. Chen teaches that suitable binders for the coating include acrylates (column 7, lines 30-55). Further, Chen teaches that a suitable dispersing agent that minimizes the agglomeration of the abrasive particles is Solsperse 24000 (column 8, lines 1-5).

27. Therefore it would have been obvious to one of ordinary skill in the art at the time the invention was made to utilize the Solsperse 24000 dispersing agent taught by Chen as the dispersing agent in the solution containing abrasive particles and a binder precursor comprising an acrylate based dispersion taught by Bruxvoort.

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28. One would have been motivated to make this modification in light of the fact that Solsperse 24000 is taught by Chen to be a suitable dispersant for use in the same type of binder utilized by Bruxvoort (acrylate), and due to the fact that Chen specifically teaches that the use of this dispersing agent minimizes the agglomeration of abrasive particles in the binder, which is a problem that is likely to occur in Bruxvoort, as Bruxvoort uses the same type of binder to contain the same type of particles as Chen.

29. Although this combination does not explicitly teach the applicants requirements of a dispersing agent having an amine value >4.5 and a molecular weight >500 , it is the examiner position that these limitations are met, as Solsperse 24000 is cited on page 14 tables 2 and 3 as a suitable surfactant exhibiting these properties. Thus, these limitations are met.

30. The limitations of claim 18 require the coating to be cured. This limitation is taught by Bruxvoort as set forth above for claim 17.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Nikolas J. Uhlir whose telephone number is 703-305-0179. The examiner can normally be reached on Mon-Fri 7:30 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Paul Thibodeau can be reached on 703-308-2367. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

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Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-0389.

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